SUPPLEMENT.

The Mining Journal,

RAILWAY AND COMMERCIAL GAZETTE:

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

No. 1810.—Vol. XL. LONDON, SATURDAY, APRIL 30, 1870. {STAMPED .. SIXPENCE. UNSTAMPED, FIVEPENCE

Original Correspondence.

GOLD FIELDS OF NOVA SCOTIA.

Sir,—Although the returns for 1869 show a falling off in the gross ield compared with the preceding year, the steady average per man nd per ton establishes, beyond doubt, the profitable and permanent haracter of the Gold Fields of Nova Scotia.

There is no time by the present mail to give a detailed review, but he decreased yield may be explained by the fact that operations ere conducted on a less extensive scale, and no beds of exceptionly rich ore were encountered, as in the years 1866 and 1867. Seveal Canadian companies, too, who had organised an insufficient capital, ere obliged to close their works until a better time prevails in the oney market, and other properties were shut down pending negoiations for their transfer.

Only one property, the Westminster, at Laurencetown, was succssfully disposed of in England. Another, at Musquodoboit, that ould have given an excellent account of itself, and proved a very munerative investment at the price at which it was offered, was l but sold, when the interference of a person put forward by a ember of this Government, as Commissioner for Mines in London, nd claiming to have a pre-emption of the property, summarily terminated negociations. In justice to the owner of the property and the arties who offered it to the public, it must be stated that the Governent broker *had no bond*, and that his interference was unwarrantable.

The *declared* returns for the whole province total was as follows he end of 1869:—

	Gold yield. Oz. dwt. gr.	No. of miners daily.	Quartz crushed, per 100 lbs.	Average per ton of 2240 lbs. Oz. dwt. gr.	Annual earnings, per man.
.....	7,275 0 0	500	134,800	1 3 2	$291 00
.....	14,001 14 17	877	340,035	0 18 10	319 30
.....	20,022 18 13	810	428,700	1 0 20	494 36
.....	2,5454 4 8	683	500,025	1 3 6	745 76
.....	25,204 13 2	679	635,387	0 17 13	742 56
.....	27,314 11 11	702	666,429	0 19 10	778 66
.....	20,541 6 10	774	678,817	0 14 6	530 84
.....	17,868 10 19	676	708,486	0 11 5	528 64
otal....	157,682 9 8	*713	4,092,679	*0 18 10	*553 90

* Mean.

Of the above, only 873 ozs. 7 dwts. 18 grs. was alluvial gold, the t having been obtained exclusively from quartz crushings. Allow- 6000 ozs. as the product of 1860 and 1861, before records were pt, and about 10 per cent. for quantities not declared or stolen in mine (an estimate much below the real amount), the gross yield gold in Nova Scotia during the past ten years has been 180,000 ozs., presenting, in round numbers, a value of 720,000*l.* sterling.

March returns are not yet to hand, but, in the meanwhile, the subned results for the year 1869, and for the month of February will ve useful, and comments will follow by another post.

Halifax, N.S., April 8. ACADIENSIS.

Gold Product, February, 1870.

District.	Gold yield. Oz. dwt. gr.	Quartz crushed (Colonial weight).
Sherbrooke	309 0 0	Tons 694 03
Tangier	135 7 20	88 00
Oldham	104 7 14	200 07
Waverley	78 7 0	141 00
Renfrew	71 2 0	223 10
Musquodoboit	52 5 21	73 10
Uniacke	47 2 4	105 00
Wine Harbour	28 7 12	100 10
Isaac's Harbour	2 11 15	3 10

Nova Scotia Gold Product, 1869.

strict.	Gold product. Oz. dwt. gr.*	Average miners daily.†	Quartz crushed. Tons cwt.‡	Aver. per 2000 lbs. Oz. dwt. gr.§	Annual proportion per miner.‖
brooke....	5546 11 16	134	11,500 00	9 15 5	£165 11 6
frew	3097 15 7	112	7,258 09	8 12 8	110 12 9
acke	1867 3 12	71	3,171 13	11 18 6	105 3 10
verley	1591 14 19	54	3,915 15	8 8 9	117 18 1
ham	1594 16 0	56	1,735 02	18 1 9	99 12 7
quodobolt..	1001 0 23	36	1,582 17	12 15 6	111 4 7
tague	805 13 14	29	572 07	1 8 37	111 2 7
e Harbour..	719 8 19	65	2,726 12	5 6 0	44 5 6
lassified ..	394 11 19	29	622 09	6 23 0	54 8 7
c's Harbour	227 0 13	19	784 00	5 19 0	47 15 11
rencetown..	30 0 20	20	223 00	2 16 7	6 1 8
tal	17,686 0 19	676 ..	35,426 0 6	9 23 8	£105 14 7

Including 177 ozs. 18 dwts. 11 grs. alluvial gold from unclassified districts.
† Allowing 312 working days to the year. ‡ Colonial tons of 2000 lbs.
§ Per colonial ton. ‖ Valuing the ounce at 4*l.* sterling.

NITRO-GLYCERINE, AND DYNAMITE.

r,—The blasting material above named seems to have awakened h prejudice, theoretically and practically, against its use. Eng- for example, whose sons claim a foremost place, if not the van, e march of improvement, has by legislative enactments virly prohibited its employment; this is a stringent proceeding, but s premise that the prime movers in the agitation which led to e extreme measures being taken were actuated solely by feelings umanity.

e need not dwell on the loss of life and limb in British mines equent on the use of other blasting substances; such an occurs as the Morfa explosion is, of course, exceptional. But the most gerous class of accidents to which miners, as a rule, are exposed hose resulting from "careless tamping," or "boring out holes" r "missing fire." Quite recently two men were dreadfully maimed ne of the mines near Camborne, Cornwall, from boring out a charged with gun-cotton, showing that cotton is not harmless miners to deal with any more than blasting powder, the properof which being well known, under like conditions.

lost assuredly Nitro-Glycerine is the safest explosive yet introed for wet ground, and especially sinking holes. Doubtless this rtion will be questioned, but take a sinking hole in a wet shaft n example. The hole being bored its proper depth, the next obis to render it dry by the process of "claying," or waterproof ridges might be used: but in either case the hole has to be tamped, occasionally it misses fire, when boring-out becomes necessary, ving considerable loss of time and material; but even if all goes and the shot is fired, its effect on the rock is much less than d have been effected by Nitro-Glycerine. One important advano ruing from the use of the last-named article arises from the hat however wet the hole might prove it is at once ready for ng, without the least preliminary labour as to drying the hole; t, the presence of water is an advantage, for in charging, the specific gravity of Glycerine being greater than that of water, it sinks immediately to the bottom, whilst the water itself is all the packing, or tamping, required; and, if water is not available, loose sand is quite as effective, having first set a small portion of cotton waste, or oakum, on the Nitro-Glycerine.

The process of blasting is also very simple indeed. Taking a length of ordinary water-proof safety-fuse, and placing a large percussion cap (manufactured for the purpose) on one end, care being taken to render the joint water-tight by a slight coating of beeswax, and in case of missing fire, which very seldom happens, it is an easy matter to insert another fuse without risk from "boring out."

Taking into account the extraordinary strength claimed for this substance—ten times that of the best blasting powder—there is another advantageous item also in the matter of boring holes, powder requiring them of a much larger size, and even then much of the force is expended very high up from the bottom of holes, whereas it is evident that the concentration of power should be exerted at the bottom of the hole, and this is the case with Nitro-Glycerine, shivering the hardest rocks in a most surprising manner, neither is this to be wondered at by anyone who hath witnessed its effects in tearing a solid mass of wrought-iron asunder.

In this immediate district one mining company have used up about 7 tons of Nitro-Glycerine, without accident, and a most effective blasting agent it has proved in rock of such a character that it is doubtful if even the tinstone of Dolcoath or Tincroft Mines, in Cornwall, is so difficult to work. Yielding, however, to the force of public opinion, the use of pure Nitro-Glycerine has been discontinued for Dynamite, under which name and form, it must be acknowledged, it is much safer both for carriage and in use; indeed, it seems difficult to name an explosive so free from liability to accidental explosion as Dynamite, for even if kindled by fire the only result is to burn harmlessly. Blows might possibly cause it to explode, but it requires a sharp blow from a detonating cap well charged with fulminating powder to fire it effectively. Thus, it will be seen that there is no particular danger attendant on its transport, even over the Andes or Sierra Nevadas. It being evident, too, that where no "tamping up" of holes is required a considerable source of danger to reckless miners is removed. Nevertheless, careful handling is required. Even a locomotive, seeming so obedient to the engineer's will, requires watchfulness and care to control the movements actuated by a force of (say) 100 lbs. per inch. Gunpowder and steam are powerful subjects, but give us miners our choice at least to use Dynamite whenever it is desirable or necessary.

The *Mining Journal*, backed by its supporters, can bring a powerful influence to bear for the removal of restrictions on the carriage of Dynamite. English workmen, taking the trades of the kingdom as a whole, seem to be using their best, or rather their worst, and strongest efforts to drive all the best paying work into other lands, through the influence of their society regulations curtailing the working time, and the amount of work to be got through in the few hours remaining dignified by the name of working time. And why is this done? Simply that the incapables in each branch of industry shall earn the same wages as good and earnest workmen. Seeing these tendencies, then let us pray for a removal of legislative restrictions on our pursuits, thus allowing us who are free from the shackles of Trades Unionism to employ the best known methods which science and experience offer to split the rocks and place their treasures on the market in the most expeditious manner possible consistent with safety, having the interests of employer and employed in view, and whose interests are identical, the palaver of agitators and idlers notwithstanding.

Norway, April 19. A. R. R. O.

N. ENNOR ON THE FORMATION OF DIAMONDS AND MINERALS.

Sir,—In my letter, published in the Supplement to the *Mining Journal* of March 19, I gave my views as to what formed primitive rocks, and I came to the conclusion that all rocks were formed from the three gases,—these combined formed carbon, and from these substances each and every rock formed. I think I showed with sufficient clearness that ordinary granite, at the depth of half a mile, can contain but little besides *silica*, *alumina*, and *potash*, and that all other rocks were formed from them by amalgamating in varying proportions: this can be shown by the contents of nearly every layer of rock, and by none more clearly than in the common quartz and the black flint. First, quartz is composed of over 98 parts silica, with a trace of iron. This forms transparent six-sided crystals. Black flint is also composed of 98 parts silica, ¾ part lime, and ½ part iron. The flints all form in bulbs, with a white coat around them. The contents of these two clearly show the effects the change of a ¾ part of lime had on the silica. It is the changing of the parts that alters all the layers of rock that man sees; and I believe it to be not only the law by which rocks are formed, but the natural and universal law that forms every substance composing this world.

A professional man, some time since, took me up rather sharply respecting the manner in which minerals are formed. He asked me why I did not turn my attention to it? I said I had my own views on the subject, but that it was the professional and scientific man's place to lead the way, and I would then make my comments; but finding no one enters the field to open up such an interesting matter, I throw down the gauntlet by giving my views.

I shall first remark upon the formation of the tree and diamond, then on mineral substances. This will be a beginning sufficient, I hope, to call the attention of able and scientific men to one of the most interesting subjects of the present day. I trust my views and suggestions may stimulate them to expound their views, so as to ultimately cause the development of some of the now hidden laws of nature, that they may be laid down as guides to the future.

The *Diamond* is a gem. How was it first formed? It is known to be a transparent crystal, having its own particular form. This being so, I contend that it is a matter of impossibility for any 1000 crystals all to form alike, if they did not grow as fruit does. I cannot accept the statement that they were formed when the world was formed, or since from volcanic matter, for the real diamond is carbon, and melting volcanic matter would have so disposed of its carbon as to leave it unfit to form diamonds, or even minerals, so that man must find something more substantial to argue on than that it was formed of volcanic matter, or from interior fire, or volcanic eruptions. I may here say that I would to God I could see England's professional men ignore the theory of the earth's internal fire, and abandon the idea of erupted lava ever forming a single mountain in England, Scotland, Ireland, or Wales. However, to return to the diamond. I must briefly show from my views that the three gases formed all substances. First, the primitive rock, water, and air. These have ever since continued to unite in different proportions, apparently to the eye a multiplicity of new substances, such as man cannot comprehend. He stands agast at them when he sees the wisdom of the all-wise Creator, who first formed three apparently simple gases, which when set in motion would form all things.

In order to illustrate this I will first notice the apple tree, and then its fruit—said to have been the forbidden fruit which caused the fall of man—noticing that the tree must be grown before it can bear fruit; in like manner the strata must be grown before it can bear diamonds. This tree, we may expect, was wood, like most other trees, produced from the three gases, and the tree was composed of (say) oxygen, 40½ parts; hydrogen, 6½ parts; nitrogen, 1 part; and carbon, 52 parts, produced from the gases = 100 parts. Trees are as the rocks, every kind has a change of parts. Two apple trees, the sweet and the sour, have a change of parts. Then, the tree will not bear fruit if the soil about it does not contain the right nutrition to supply the required parts, nor will rocks bear their minerals. All trees from the variation of these parts crystallise their leaves and fruits, such as the apple, pear, plum, cherry, and even the nut and acorn—it is the prevailing law of nature. If I were to include in this class all vegetation that bear fruit they could be counted by thousands, and all, if traced back, have come from the same original substances, but to the eye they appear in thousands of different forms, in consequence of their combining in different proportions. These fruits may well be termed the refined essence produced by each kind of tree.

Now, I ask, what is the Diamond, and how found? I say it is the fruit of the strata. The really valuable diamond is said to be pure *carbon*. It is more brilliant and transparent than any other crystal, and is produced in mixed carboniferous layers in its own crystalline form, and is only the fruit of a certain layer. It appears to me somewhat singular that the component parts of nearly all diamonds are laid down, but none of the contents of minerals. I believe that every diamond is found detached: it appears to be their law of growth. The most transparent crystal quartz found in England is in Tintagel cliffs. These also are found detached, in crevices, or vughs, in clay-slate rock, embedded in apparently black soot. These are called diamond nests. I am confident that these grow, as fruit does on trees.

Then, see the Brazilian topaz: it is formed of abont 50 parts alumina, 29 of silica, and 19 of fluoric acid, with other traces. Saxon topaz is about 57 parts of alumina, 35 of silica, and 7½ fluoric acid. Oriental ruby, if white, is nearly equal, or similar, to the real diamond. Alamantine ruby is 85 parts of alumina, 9 of magnesia, and 6 of cromic acid. Creolite diamand is 36 parts of alumina, 40 of soda, 22 of fluoric acid, and water. Saphire is laid down as 90 alumina, 6 silica, 1 oxide of iron, and other traces. I may mention that the base of all diamonds, except one, are alumina and silica. Then, alumina is 50 per cent. metal. Then, I ask some learned man if the metal portion joins to form the diamond? If so it must become transparent, as carbon has, in order to form the most valuable diamond known. However this may be, I contend that diamonds are fruits, grown as the fruits on trees, from layers of rock containing carbon, alumina, silica, and fluoric acid, with traces of alkaline substances.

Let this suffice for the diamonds, and I will turn to the mineral formations; and to show my views I will begin with the so-called primitive rock, *Granite*. In its first formation it contained silica, alumina, and potash. This rock, I contend, has undergone a great change near the surface since it was first found. It has become contaminated with sulphur, carbon, iron, and nearly all the alkaline substances. It is crossed with veins or lodes, cross lodes, and elvan courses. These have grown and enlarged through it in all directions. These lodes grow through strata, as trees on the earth grow and become larger, or as the veins, arteries, and ligaments grow in man. What minerals does the granite assist in growing? Tin, wolfram, copper, sulphur, and schorl. Does granite grow anything besides that remunerates man for his toil? It grows finer crystals of tin than are grown in clay-slate; in fact, it appears to be its mother rock when mixed with schorl.

Lodes, cross lodes, and elvans grow through granite rocks, as trees grow, and bear all the before-mentioned metals as fruits, and in their own crystals. Granite lodes bear better quality copper ores than clay-slate: this is through not being highly charged with sulphur to form yellow ore in quantity. Then oxygen and other substances step in to supply its place, and produce a higher percentage of copper. Tin is an oxide, and forms readily in granite lodes, and often in the granite rocks and elvans. Lead and zinc form but sparingly in granite; it is not congenial to their growth. Many men report good deposits of lead and zinc in granite; these men had better take samples of granite in tin districts, and, again, from the so-called granite, where good lead mines are found, and get them analised, when they will know the difference. Few mine inspectors know granite out of Cornwall and Devon, and many of them not even there: they are aware that in many places in these counties where the rock is called granite it bears no mineral, but they cannot tell you why. I deny that genuine granite will form lead in quantity.

Clay-slate rock is now found contaminated by nearly every substance. Alumina and silica are the bulk: it contains sulphur, arsenic, carbon, and all alkaline substances; it is the most productive rock known for minerals and metals. The lodes in granite all pass up into and through clay-slate. I may be asked what fruit clay-slate grows? My answer is, every metal and mineral known. It bears tin where it overlaps tin granite, at not over 300 fms. deep. It will also grow copper of every kind, but copper is always most ready to join sulphur and iron, if present, but if not it joins oxide, or carbonate, or any substance it has an affinity for. It will not join arsenic in sufficient quantity to be valuable. Arsenic is not required to form copper. I believe arsenical acid is the enemy that is ever ready, when an opportunity offers, to attack and dissolve copper. Clay-slate will also grow copper, antimony, iron, zinc, gold, silver, and the diamond, or, as I before mentioned, nearly every metal and mineral known, all in their own crystals, as fruits are formed and grown on trees. I next come to the Old Red Sandstone, which I pass by, only asking professional and practical men what that grows? Then comes the mountain lime formation: this bears lead and zinc in great perfection, also iron, and good copper at times. Then come the carboniferous layers. I again ask professional men, what

grown in these layers to pay men besides iron and coal? Then, what have all the layers above produced to remunerate man? I must not have layers shown me as productive ones that are above the carboniferous layers, or where they should have been, if they are missing without clear proof.

This subject is too lengthy for one letter; I will next week send the second part, the growth of metals being rather a perplexing subject. I shall then also show that (as most practical men are aware) copper is continually going off in solution from every old deposit; and I ask what has become of it? N. ENNOR.

St. Teath, Camelford.

THE LEAD MINES OF FLINTSHIRE.

SIR,—After long being regarded with comparative apathy and indifference, it is gratifying to note that the lead mines of this county now occupy an important position in the estimation of the public. That they should ever have occupied any other—that a district so surpassingly rich, containing so many mines of even historic repute, the very names of which excite visions of gold, and presenting even to the uninitiated so many prizes still undrawn, in the enterprising times that we have had, should ever have been in any way neglected is surprising; but they have been to a great extent, and it is only recently that any change for the better could be chronicled. Not within the limits of the kingdom do there exist more promising fields for investment; unlike many that have lately been before the public, these are in a district proved and of acknowledged merit, where experience has been great and varied, and where the facts that can be deduced therefrom are so important as to reduce the search for the mineral to almost a science: and it is problematical whether the much-vaunted fields abroad present greater attraction. But, however attractive the *true* fields are, it must by no means be imagined that mines are promoted in no other, and that the intending investor need not use the utmost discrimination, consequently, in the choice of the mine to embark in. Nature has been in no way irregular in the diffusion of the ores of lead. In every operation a certain law is to be observed, and in none more so than this; and although the law which governs the location of the deposits is so apparent, and the conditions upon which depend their profitable extraction have so often been proved, yet in few districts have they been more frequently ignored, either through ignorance or design; and after the many bitter results that have accrued therefrom it is to be feared we do not yet enjoy an immunity from such reckless mining.

The great mines are situated, as is well known, in a ridge of carboniferous limestone and associated rocks, which traverse the county in a north-westerly and south-easterly direction, bounded on the one side by the clay-slate, which crops from underneath them, and on the other by the coal measures, by which they are partially overlapped; and the great bodies of ore have been deposited in lodes or veins, having an easterly and westerly direction at or near the junction, with but few exceptions, of the limestone, &c., with the coal measures. Ignoring this important fact, thousands of pounds have been, and still are, fruitlessly spent in mines the very position of which condemns them. So it becomes highly important to the investor to ascertain whether the mines which are introduced to his notice supply this condition. And this is not all—experience has taught that in certain localities there is a limit to the existence of paying bodies of ore, which has generally been attained in those lodes which have been profitably worked, with all the resources of modern science and skill, and abandoned at no remote date, deeper than which, so long as there are promising fresh parts of the same lodes, or of others, or new lodes, entirely to develope, it is generally unadvisable in any case to go. So, when any of the abandoned mines referred to are resuscitated, it becomes important to ascertain whether the contemplated operations will be restricted either designedly or from necessity to the deeper development of the old lodes. If so, unless they can be resuscitated under circumstances much more favourable than those which existed when they were abandoned, reduced royalties and enhanced value of the product, for instance, or unless the cost of draining can be eliminated or considerably reduced by a cheap adit level, or by the co-operation of neighbouring mines, let them be regarded with the greatest caution. Under all circumstances, a decided preference ought to be given to those mines which are admirably situated in a geological point of view, having for their object not only the deeper development of lodes comparatively untried, or which have been worked profitably to but a shallow depth, but also the development, or the discovery and development, of lodes in tracts of country either wholly or but partially unproved, for in these he has the chance of winning the shallower, from which, as a rule, the greatest profits are derived, as well as the deeper deposits of ore; and not only this, but also since the capital required in such mines is comparatively small, no large sum will in most cases purchase a considerable share.

Although so attractive, especially to the initiated, this class of mines are yet to a great extent overlooked, and investors would only consult their best interests by giving them more attention. Amongst many which deserve especial notice are the Golden Grove, the Gorsedd and Celyn Level, the Holywell Level, the North Henblas, the West Pant-y-Go, and the Fron Mines. The last are admirably situated in every respect, and the operations now being carried out are such as to enable one to predict for them an early and great success. We must not omit to mention the North Hendre, the Pen-y-Rhos, nor the Tyddyn-y-Gwynt Mines, which are about to be started. There is a great analogy between the position of the Tyddyn-y-Gwynt Mines, and that of the celebrated Talargoch and the Minera Mines. Like the two, it is located at the extremity of a range of limestone, in which appears at the junction with the coal measures in succession the renowned Rhosesmor, the Pant-y-Go, the Halkyn, the Henblas, the Herward and Milwr, the Holway, the Trelogan, and the historic Talargoch Mines, all of which have been wonderfully rich. The sett is very extensive, and seldom, if ever, has Nature been more lavish in her indications of success. The features are indeed grand, and it needs no prophet to fortel that if the county is shortly to be electrified by a success greater than ordinary it will be by a success in these mines. A more detailed account of the foregoing, together with notices of other mines of merit, with your kind permission, I will lay before your readers in a future issue. M. F. H.

MINING IN NORTH WALES.

SIR,—I yesterday (Monday) paid a visit to inspect some mines in the neighhoud of Penrhyndendraeth, not far from Portmadoc, up the valley called Cwm Glan Brothan, wherein I found mines of copper and lead. I may truly say the finest lodes I ever saw are in this vale. The first, Cainant Mawr, a lead mine. Here the proprietors are driving a level east upon the course of the lode, which is about 5 ft. wide, a very strong, beautifully mineralised lode, worth at least 2 tons of lead ore to the fathom, and this only about 6 fms. from surface. The lode has been traced about a mile long, and the back of it seen in a great many places, by cutting open the earth a few inches, and throughout the entire length already seen ore of a beautiful quality, mixed with very fine blende and copper, is visible. To the western end of this sett is a perpendicular fall of about 20 fms. or more, at the bottom of which, and by the side of a running river, a level has been started, and driven about 10 or 12 fms., far superior to a shaft at that depth, and such a beautiful piece of flat ground all the way down the stream, even to the highway that leads one to either the stations of the above-named places, or to the shipping-port of Portmadoc—distance from either about two or three miles. This mine is surrounded by the Bwich-y-Piwm, the Rhyd Mine, and, in the same valley, Penrait Mine, and Pant-y-rach Copper Mine—in fact, the vale is full of rich mines, known only by those who are working them as private companies;—they are not even known in the market. I have never in all my thirty years' mining experience seen a valley so short yet full of good mines, the deepest of which, the Bwich-y-Piwm, is about 70 fms. Truly it is worth anybody's while to take a trip to Portmadoc, by the train that runs to Festiniog every two hours throughout the day, calling upon Captain Williams, the agent of the mines, who lives at the Miners' Arms Hotel, on the road-side to the vale; and, as some of the mines are for sale, being worked by private parties, who are desirous of dividing partnership, some of the owners, being poor men, have offered the property to me for a very reasonable price, and I shall be happy to render any assistance in my power to see them started under a good party of mining gentlemen, either singly or united into one large and certain-paying mine.

I would here touch, also, upon mines further north, near the Snowdon Hills, in the Nantlle Vale, where I have occasion often to visit. The first of the run of mines in this valley is the Old Drws-y-Coed, which has for a great many years returned thousands of pounds to the fortunate shareholders, and is still carrying on its monthly sales of copper. Immediately to the west of the old mine comes the Symddi Dyluan (or the Owl's Chimney), from which thousands of tons of copper have been sold—for many years 1000 tons annually were sold from this mine, and I hope the day is not far distant when we may hear that it is doing so again. The present working of this mine is now all new; the old mine had gone so deep, and so far off the lode, as to require such very long crosscuts to the lode that a new shaft has been sunk from surface further north-west, so as to catch the lode at a good distance of about 80 fms. in depth, of which nearly 70 fms. of which have been sunk—so that, taking into consideration the present engine-shaft being within a few fathoms of the required depth, the appearance of the lode in the bottom of the old mine leads one to reasonably hope for a good mine—indeed, as good as ever it was. To the west, and on the same lode, is a sett, recently taken up by an influential party of mining gentlemen, in which they have already found some nice specimens of lead and copper. They too, doubtless, expect to meet with every success in having as good a mine as their eastern neighbours. On the other side of the water, facing the above-mentioned mines, is the celebrated Pen'Allt Mine. Standing as this mine does in the opinion of London gentlemen, it requires no comment from my pen—suffice it to say that ere long this valley will stand in good and great mining repute. I hope, and have no reason to fear, that North Wales will by-and-bye spring up like a rose in the desert, and that its valleys shall laugh and sing with any others of the mining kingdom. SAMPSON TREVETHAN, Jun.

Pen-y-Groes, N.W., April 26.

THE PEN'ALLT MINING COMPANY.

SIR,—You report me as stating at the meeting of shareholders that when I was at the Pen'Allt Mine I was informed that the managers of Snailbeach, Tankerville, and West Stiperstones had inspected Pen'Allt, and had spoken of it in the most favourable terms, holding out the greatest hopes that it would be equal to those Shropshire mines. What I stated was this—"that I had inspected Pen'Allt, and since then that I had been in Shropshire, and had paid a visit to the managers at Snailbeach, Tankerville, West Tankerville, and Stiperstones, and from what I had seen in that district, and the favourable terms in which Pen'Allt is spoken of, I had the greatest hope that it would equal the best mines in Shropshire"—without having heard it from the agents of the Shropshire mines.—*April 26.* F. W. BAWTREE.

TEIGN VALLEY LEAD AND BARYTES MINE.

SIR,—I beg to inform "Enquirer" and others, through the useful columns of the Journal, that about three-fourths of the shares are taken by first-class men, and that the share list will shortly be closed. The remaining shares will be held by the company, and issued from time to time at a premium upon their original cost. The shareholders will have due notice of the meeting for closing the list, and discussing the future of the mine. The mass of barytes will be prepared for market on the spot. Samples may be seen at my office, St. Stephen's-street, Bristol. R. G. SMITH, Consulting Engineer.

EAST WHEAL LOVELL, AND WEST FRANCES.

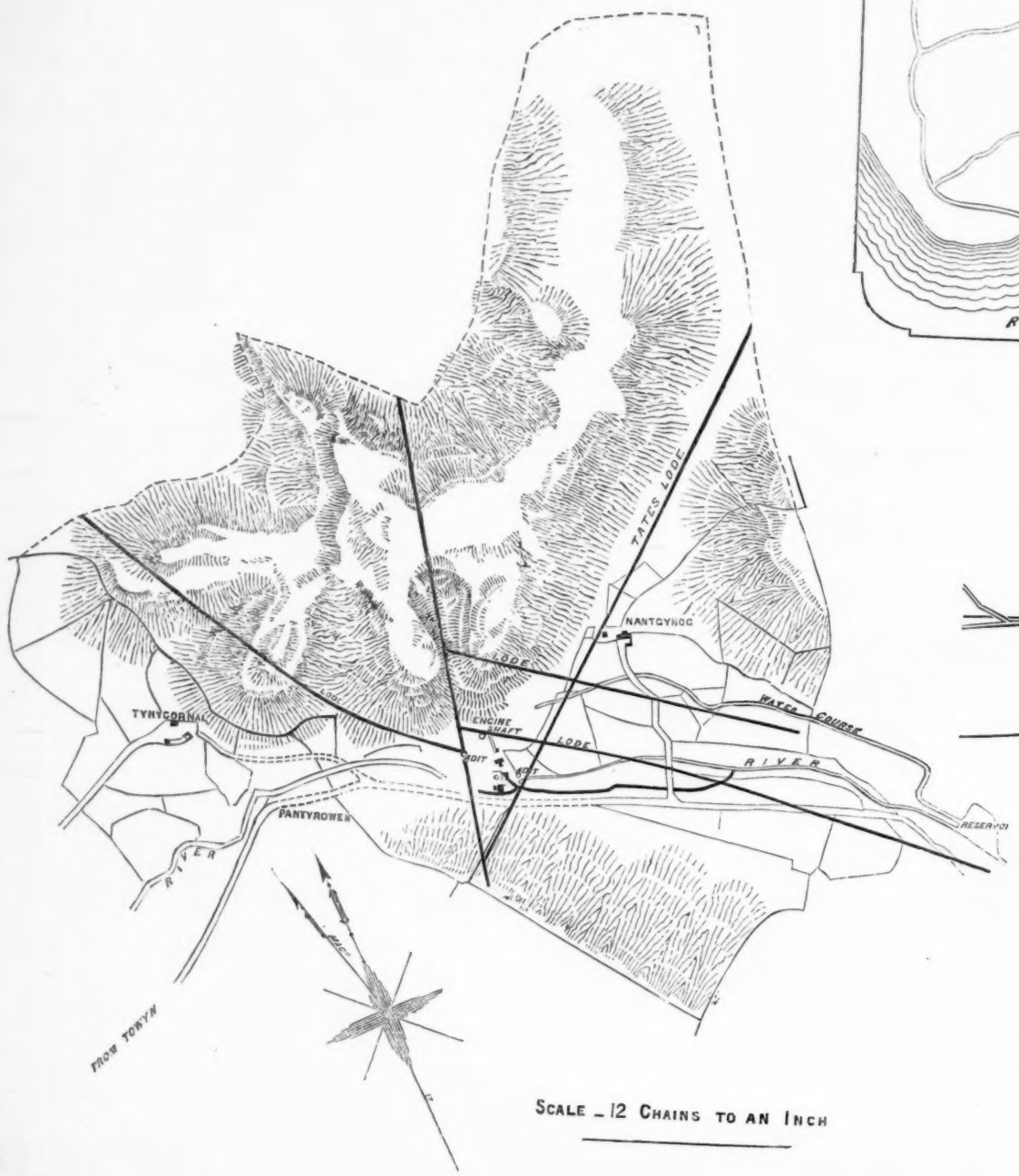
SIR,—In last week's Journal, in a letter headed "East Wheal Lovell," "Subscriber" compares the difference of management of three or four other mines, and amongst them West Wheal Frances, favourably with the first-named mine. Now, Sir, "Subscriber" must have some interest in West Frances, or be in some way connected with it, as the following facts will show:—West Wheal Frances has been, and is still, a very expensive mine; it has been working at least twenty-one years, the work appearing to have been nearly done twice over, and made calls on the shareholders until very lately to the tune of from 11*l.* to 12*l.* per share, when, owing to the rise in tin, a small dividend was declared. Since that I believe two similar dividends have been declared; but it is now said that instead of the last dividend a call should have been made. An examination into the system of management pursued at this mine, with the amounts paid to the respective parties, I fancy would not prove so satisfactory as is generally supposed. I would recommend that a good resident agent be engaged, and a general revisal of the duties and the emoluments of the others. Reform is much needed. Why does not the purser send the exact amount paid per share to the Journal, that it may appear correctly in the Share List? N. T.

[For remainder of Original Correspondence, see this day's Journal.]

THE ABERDOVEY MINES.

MERIONETHSHIRE,

—— 1870.——



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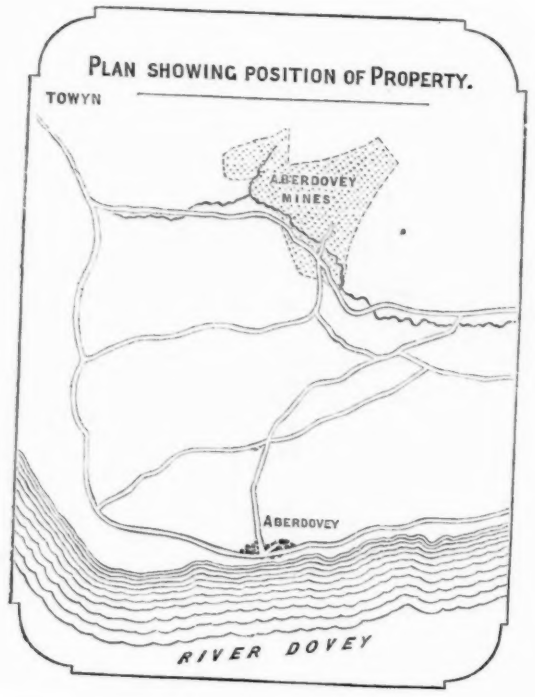

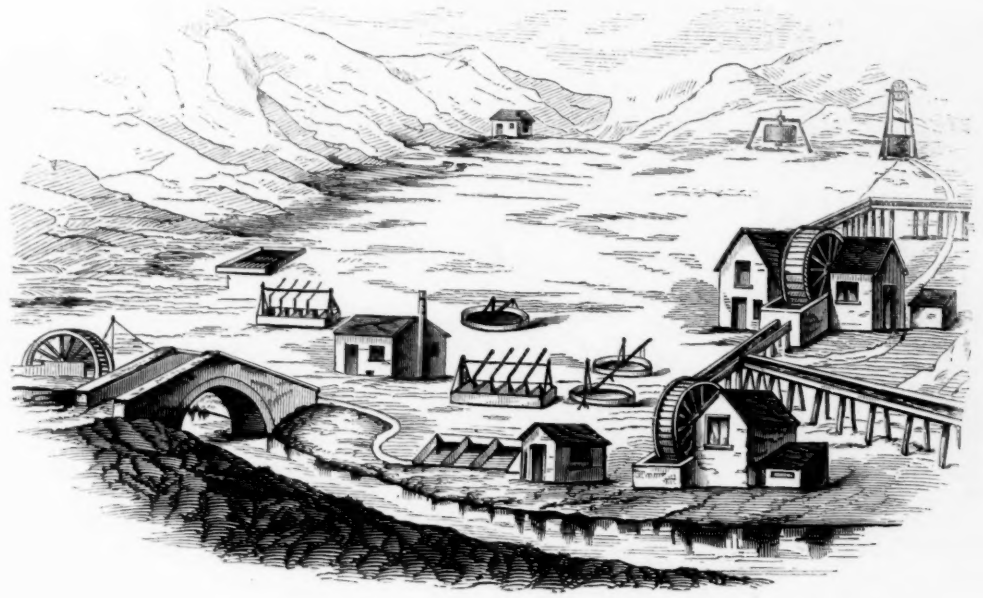

PLAN AND LONGITUDINAL SECTION OF WORKINGS.

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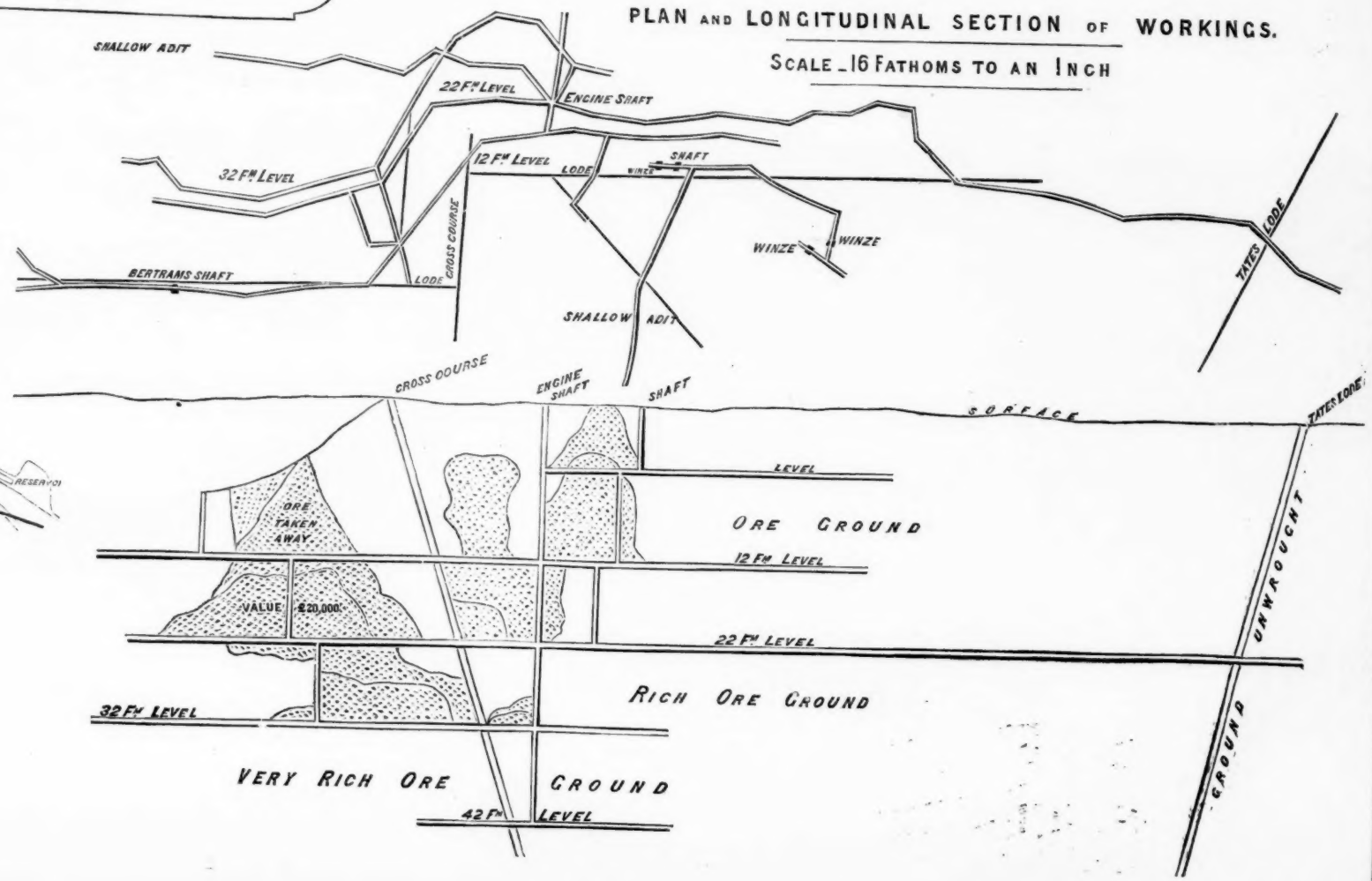

THE COMPOUND ENGINE.

A meeting of the Cleveland Iron Trade Foremen's Association was held at Middlesborough, on Saturday, when Mr. G. R. MORDUE, a member of the Cleveland Institute of Engineers, read a paper "On the Compound Engine." There was a good attendance of members, and the paper, which was elaborately illustrated by diagrams, was listened to with considerable interest. The President of the Association (Mr. J. ONBRIDGE) occupied the chair. The following is a copious abstract of the paper:—

Mr. MORDUE commenced by saying the compound engine may be described simply as a prime mover in which the steam can be expanded in such a manner that the different working parts are subjected to no shock or extremely varying strain, which take place in the expansive engine, using steam (say) at 60 lbs. pressure, and cutting off at one-sixth of the stroke, thus commencing with a very heavy initial strain, and ending with a pressure scarcely able to overcome the friction. For many years, although high-pressure steam has been well known to be economical in proportion to its pressure, yet its introduction into steam-vessels has had to contend with very strong prejudices; these prejudices have, however, been almost universally overcome, and are fast disappearing; hence the increased favour the compound engine is now finding. Two diagrams were here shown, one theoretical and the other actual, explaining that the falling of the pressure-curve may be ascribed to four causes—Firstly, falling of the pressure due to condensation; secondly, leakage past the piston; thirdly, friction, and, therefore, a slight retardation of the steam; and, fourthly, wire-drawing, owing to the gradual closing of the valve. In the common single-acting pumping-engine the reader went on to show that another advantage is derived by the application to expansion, and that is greater regularity of speed, for the reason that the piston naturally gains acceleration of motion due to its momentum towards the end of the stroke, being followed up by the full initial force of the steam. If, however, the steam be worked expansively, the piston action is rendered more uniform, for the initial pressure starts the engine, and the reduced pressure due to expansion is sufficient to give out power enough to maintain the movement without unduly increasing it. It should also be considered that in this class of engine the pressure has not only to overcome the unknown quantity of frictional resistance, but it has also to start the enertial mass of the whole of the machinery, spear-rods, and column of water; and, as the driving power is greater than the resistance, the moving parts must obtain an increased speed the nearer the piston approaches the end of the stroke; the driving power must, therefore, be decreased before the termination of the stroke, so that the said increased momentum be absorbed, and the piston gradually brought to a state of rest. This, of course, did not apply to any engine except those with a slow piston speed, and having no fly-wheel to act as a governor or reservoir of power.

Mr. MORDUE here very lucidly explained, by the aid of diagrams, the construction and mode of working of the first compound engine, which he said was, to the best of his knowledge, that patented in 1781 by HORNBLOWER, and which was probably designed with a view to work steam expansively, without infringing WATT'S patent of 1769. In Mr. MORDUE'S opinion, the simpliest modern arrangement of the engine under consideration is that where two cylinders only are employed, with relative areas of about 4 to 1. The steam from the high-pressure cylinder exhausts direct into the steam-chest of the low-pressure cylinder, and each steam-chest is fitted with a slide-valve of the ordinary kind, but both having separate link motions, so that the expansion in the high-pressure engine may be varied at pleasure, without interfering with the motion or travel of the valve of the low-pressure engine, and but for this desideratum one set of starting gear would be sufficient for both engines, the cranks being at right angles to each other. On the low-pressure cylinder there is also an auxiliary valve, by which steam may be admitted to either side of the piston, to start the engines in case they may have been stopped after the point of cut-off, or on the dead centre of the high-pressure engine. Without the aid of this valve the engines would be almost useless, owing to their starting position being so very limited. If, however, they were to consider engines of this type in detail, it would be found that the only additional work upon them consists in the extra starting gear and the auxiliary valve, when compared with expansive engines working with excessive lap. To the latter practice there is a very great objection—if the slides have sufficient lap to cut off at half-stroke, or earlier, the engines are just as difficult to start as the compound engine just mentioned would be if they had not the assistance of the auxiliary valve, for the reason that whilst one engine is on the dead centre it is in that position unable to give out any rotative power; and the other engine, though at half-stroke, is equally powerless, through the admission steam port being closed by the lap. To reverse these engines would be equally as ineffective as to start them, for by the operation the covering position would be merely changed, of the slide-valve, from one port to the other without any results. The best means of working steam expansively in the ordinary engine is by the application of separate expansion valves. This arrangement, however, entails greater complication and number of working parts, and, therefore, much additional friction. The two-cylinder compound engine bears favourable comparison with any engine fitted with expansion gear, so far as simplicity is concerned. Another advantage which the compound engine possesses is, that the cooling action of the condenser is never brought to bear on the piston of the high-pressure cylinder, and also if any leakage of steam takes place in the slide-valve or piston of the high-pressure cylinder such steam is not lost, but is economised in the second cylinder; and if steam is taken from a boiler that is comparatively free from priming, and which will in that case give off dry steam at a pressure (say) of 30 lbs. per square inch, then, perhaps, it could scarcely be necessary use either jacket or superheater. If working (say) up to three expansions, and up to (say) eight expansions, a superheater alone might suffice; if, however, higher expansion is required, then all care must be taken to keep the cylinders hot, and in such case both superheater and steam-jacket will be found necessary.

In sea-going steamers all compound engines are absolutely necessitated to have surface condensers, because when sea water, giving off steam at a pressure of more that 50 lbs. per square inch, precipitates the salts of magnesia and lime, which are insoluable at or above the temperature due to this pressure, whereby an injurious deposit is formed in the boiler. Again, unless care be exercised, it is equally likely the destruction may go on in boilers fed with surface condensers. This destruction is exhibited by a very rapid corrosion or eating away of the plates in a very peculiar manner. The cause of this has been ascribed to the chemical and galvanic action, and is said to be caused by the frequent contact of the feed-water with the copper feed-pipe, brass condensers, and iron during its transit from the cylinder through the condenser and back again to the boiler; and, besides this, probably the oil and grease may contain acids which would also have a destructive effect. But, whether from the former or the latter cause, the boiler may be protected by allowing the water to become sufficiently dense so as to form a thin sediment or scale upon the plates and tubes, though much difficulty will be found in keeping this coating on, and uniform throughout, for on the water again becoming fresh it seems to have a tendency to scale off. Another way is by frequently changing the water—say, every three days; but this in many cases would be inconvenient; and the best plan seems to be that of placing zinc plates in various parts of the boiler. By this simple means boilers have been found to be perfectly and reliably preserved. It is also a cheap method, costing only a few pence per nominal horse-power per year. The arrangements of surface condensers are numerous, some with the condensing water inside, and others with it outside the tubes, the former plan being the more general. There are also a great variety of modes of forming the tube joints followed. Two sketches were here shown, one explaining Mr. SPENCER'S plan, the tube plate being recessed to the depth of ½ in. to ⅝ in., and India-rubber rings, generally two in number, being forced into the recess between the tube and tube-plate. This presents a very neat appearance, and the only objection that can be urged against it is that the India-rubber is said to be injurious to the brass tube, so that in time the ends of the tube become destroyed, and each time a tube is drawn these rings must be cut out, and are, of course, destroyed, inasmuch as they adhere firmly to the tube and tube-plate, and are difficult to pick out of the recess. The cost of them, however, is only some 15s. or 16s. per 1000 tube ends.

The other sketch was on ALLEN'S plan, known better in this country as HORN'S plan. The hole in the tube-plate is bored about ⅛ inch larger in diameter than the outside of the tube, and into this annular space a dry wooden ferrule is driven, just tight enough to make a joint. The wood is said to have an effect upon the tube equally destructive as the India-rubber, though Mr. MORDUE said he had not seen any such results. A great advantage this system possessed is that a wooden ferrule can be split up, and the tube easily withdrawn, however foul it may be on the outside. The ferrules, too, before being driven into their places, are passed through a simple compressing machine, so that immediately the water is brought in contact with them they expand to such an extent as to make an excellent joint. The cost of the ferrules is small, being something like 4s. 6d. per gross. And whilst both the plans referred to were cheap and efficient, the tubes were perfectly free to expand or contract lengthwise. In surface condensers, though it was almost needless to mention it, it is necessary to have, in addition to the air-pump, a circulating pump to keep the cold water always in motion, which water it is at the same time constantly supplying. There might be claimed also for the surface condenser, in addition to the fresh feed water, a great saving in the avoidance of blowing-off and constant scumming, the latter operation often extending from the beginning to the end of the passage without intermission where jet condensers are used when steaming through salt water. In the latter condenser there is at times in starting the engines a difficulty to contend with in its liability to heat, so that the injection water cannot be taken. This inconvenience is entirely got rid of in the surface system. The best and most economical temperatures of condensers and feed water are found by the engineer in charge, as it is often the case that where no separate feed-heater is used it is beneficial to sacrifice a little vacuum for the increased saving of heat in the feed water. After thus referring to the principal features of the engine and condenser, Mr. MORDUE remarked on superheated steam, that when engines are working a great number of expansions, it then becomes necessary to keep the steam as hot as can consistently be done, without risking the rubbing surfaces of the cylinder face slide-valve, packing, &c., for if superheating be carried too far, that becomes so hot and dry that the lubricating element is destroyed, a seizing of the cylinder slides, &c., takes place, and the backing is burnt. Under such circumstances, the superheater itself would soon be rendered useless. Another disadvantage to which the superheater is subjected is, that as soon as firing commences to raise steam the whole of the waste heat must pass around and through it before the protecting influence given to it by the steam when working has been received. It is now generally admitted that the best way of rising it is to mix the superheated steam with the direct from the boiler, known as saturated steam. The proportion of heating surface in the superheater ought to be about one-eighth of the boiler surface, according to the practice of many engineers of authority, though seeing that the waste gases vary so much, it is not easy to lay down any definite rule. The cost of screw engines, with jet condensers, is about 36*l.* per nominal horse-power, whilst compound engines, of good make, cost about 46*l.* per nominal horse-power. This increased cost is owing principally to the surface condenser, and the extra strength of boiler necessary to resist the heavy pressure of steam; and in calculating the nominal horse-power, it is usual in the North to allow 30 circular inches jet condenser engines, and 33 circular inches for compound engines, both cylinders being taken into account. Mr. MORDUE also gave the following tabular statement of the consumption per hour of fuel, in proportion to the dead weight tonnage, of some steamers frequenting the port of Middlesborough:—

Name.	Dead weight tonnage.	Consumption per hour in cwts.	Lbs. per ton dead weight per hour steaming.	
Advance	450	9·0	2·2	Jet.
Ironmaster	460	10·0	2·4	
Middlesborough	250	7·0	2·1	
Glengary	470	8·5	2·0	
Glencoe	440	8·0	2·0	
Surbiton	1210	8·5	1·2	
Glenmore	480	5·5	0·78	Compound.
Oneida	1000	8·0	1·1	
Clarissa	700	6·5	0·96	

Discussion took place at the close, principally on the action of the feed-water from the surface condensers and the boiler-plates, Messrs. WALCH, ELGIE, ONBRIDGE, and others taking part. A cordial vote of thanks was afterwards accorded to Mr. MORDUE.

The Royal School of Mines, Jermyn Street.

MR. WARINGTON SMYTH'S LECTURES.

[FROM NOTES BY OUR OWN REPORTER.]

LECTURE XL.—Having described "pillar and stall" working in some detail, I now come (said Mr. SMYTH) to the other plans which to some extent may be said to be in opposition, and which are certainly based on different ideas and principles. Of these the first and most important is that called the "long wall" system. The cost of driving levels, of which there must be miles upon miles under the pillar system, is very great, and that doubtless led to the consideration whether some other plan could not be devised by which a less expensive mode of working might be brought in. If, for instance, the coal could be got without driving levels to so great an extent an immense saving would be effected. The long wall system achieves this object, and at the same time the exploitation of the coal in bulk may be commenced much earlier. In commencing the work levels are sometimes driven, and then wide working is established; while in other cases, as in South Wales, levels are dispensed with altogether, and large faces of working, from 30 to 50 yards in breadth, are opened out. The principle is applied in several ways. Suppose, for instance, we take a case in which the workings begin at once. A sufficiently large and strong mass is left for a shaft pillar, and then a face of working is opened (say) 25 yards in breadth. The men work protected by props, and the coal is removed on trams by a horse-road to the shaft. As the work goes on the road is continued by means of strong pack walling, and always kept up close to the face. Other workings are opened out right and left in the same manner, and a sufficient number of roadways kept up through the goafs to enable the "putters" to get the coal conveniently to the horse-way without making the distance too great. In this way there is at once a large supply obtained for the market. Take the system as it is commonly worked in Shropshire, in which the boundary of the area to be worked is first reached by a number of roadways. The workings are then opened in wide sweeps, or successive steps, and the coal is conveyed through the horse-ways to the shaft. The men are protected by two, sometimes three, rows of props; as they advance the hindermost is brought forward, and the roof let down. When stronger support is needed, chock pillars are built of logs or chocks of wood, 6 or 8 inches square and 2 to 3 feet long, which make a most substantial protection, and are put up and taken down with great ease and rapidity. One of the advantages of this plan is that as the whole of the coal is removed along the line, and the roof let down, no labour or expenditure is required to keep up the horse-roads through the gob, and as the work advances the length of the roadways gradually lessens, and the cost of maintaining them proportionately diminishes. The propping is done after two or three methods. If the ground is sufficiently strong single props are put in occasionally, and the roof, if of a kindly quality in this respect, will be found to bend down, and not break until at some distance. Then, with more treacherous ground, two rows of props are employed, set up in an alternate order, as— . . . . . When the men make a sufficient advance the hind props are brought forward, and become the front row, the roof coming down behind. When the pressure is very considerable this plan has failed, as, for instance, in South Wales, where the props having been all removed together, dangerous breakages have ensued. It is necessary, therefore, to look to the roof, and see that there are no special conditions affecting it which may interfere with security unless special care has been taken. Each prop is made to take a good bearing by putting in a head plate, or, as it is called in some districts, a "lid-tymp." As I have already mentioned in previous lectures, many lives are annually lost by falls of roof, owing in a great measure to insufficient or careless propping; and it has been proposed to make it a legal necessity to have so many props to so many yards. This, however, I think, would leave too little to the responsibility of managers, and any number fixed by law might in some cases be too few, and no doubt would as frequently be too many.

The lecturer then described the mode of putting in chock pillars where the inclination of the seam prevented their being placed on the natural sole, and where the condition of the roof was such as to require especial precautions. In these cases the security of the roads will always be a most important care, as while the roof is coming down they are often placed in jeopardy, and the communication with the shaft, of course, endangered. If we look at plans [exhibited on the walls] of the long wall system, it will be seen at once that the plan of going out to the boundary and working back has considerable advantages in respect to ventilation. The goaf being all left behind, and there being no necessity (even if there were the opportunity) for traversing it, any accumulations of gas are harmless, and by carrying a good sweep of air along the face of the working a sufficient circulation is easily kept up. On the other hand, by beginning as soon as possible after leaving the shaft there is great danger from accumulations of gas being left between the place of working and the shafts. The different forms of the long wall system are due mainly to the varying circumstances and diverse habits of different localities. Thus, in Derbyshire and Leicestershire some workings are divided into little square shaped pieces of ground, 20 or 30 yards in length, and no more than that in breadth, but they have to take the coal long distances to the roadways, so much so that it is a question, although they would be expensive in construction, whether it would not be both expedient and economical to have a greater number of roadways. The fact is that the removal of the coal is a matter of the first magnitude. Looking closely into all the circumstances, there is no doubt that the long wall system combines great advantages both in the removal of the coal and the absence of danger, and it is surprising that in some districts the colliers have a very strong prejudice against it. It is worked principally in Shropshire, Derbyshire, Leicestershire, Somersetshire, the Forest of Dean, in some parts of South Wales, and in Scotland, also in Belgium, Saxony, and in a few Westphalian mines. In these places coal is met with of every sort, and seams of all kinds, and the proportions and conditions of long wall working in these vary as much, or more, than the arrangements of pillar working. When the seams are inclined at a considerable angle the workings approximated nearly in several points to the working of a lode, as in the case of the Berthelsdorf coal field, in Saxony, where the seam is nearly vertical, and is worked by stopes. In Belgium there are some remarkable seams, which lie at different angles in alternate districts—the one almost horizontal and the next separated by faults, elevated at a great angle. The long wall mode of working is nearly the same in Saxony as it is in England in its general aspects. In Derbyshire a good solid rib of coal is left on each side of the level. At Radstock, where there are several seams of small thickness—one of 13 inches and another of 11 inches—neither of them would pay by itself, and where a seam of 2 ft. 2 in. or 2 ft. 4 in. is looked upon as unusually thick, a viewer from the North of England suggested as an improvement the Derbyshire plan of leaving a good solid piece on each side of the roadway, to give it strength. The depth being 156 fms., and the seam only 26 inches thick, he proposed by this means to leave a pillar of 20 yards broad. But even with that great breadth the creep was found to fill up the roads, and it was found better to go back to the old system, by which the roof being secured by pack walls stands while the whole of the coal is removed. In Wales and in the Forest of Dean much of the expense of maintaining roadways is avoided by starting with wide work at once, and without driving out preliminary levels. Of course, a good shaft pillar is left, and then a large space is driven out, sufficiently wide to be like a regular long wall face of work. The goaf follows up very closely, and to keep up the communication a road is packed all the way along on both sides with attle, with the addition of timber when necessary. This is a good and economic plan when the conditions are favourable; thus we have from the first a fine face of work, and the only question is how near to each other the gob-roads may be carried. These roadways ought to have the ends near each other, to lessen the difficulty of carrying the coal by the face, and they should, generally speaking, run within 20 to 30 yards of one another. In other places, of which Lund Hill is an example, the nature of the coal and roof has led to a sort of combination between the long wall and the pillar and stall system. In Leicestershire and Shropshire, where the coal has much regularity of structure and position, the miners are all able to work with a face in a long continuous line, without breaking it into stalls; but the ironstone in the latter county, which has neither a regular structure nor is laid in one direction, is worked out from the foot of the shaft in a circular form. One particular modification of the long wall system requires special mention, that of the fine colliery at Moira, in Leicestershire, where whenever the air gains access to the small coal, or slack, it is apt to occasion spontaneous combustion, than which nothing can be more dangerous, as the miners are constantly exposed to the chance of the coal taking fire, while the same conditions as produced the tendency to take fire produces carbonic acid, so that it is very important to take special precautions. It is, therefore, usual at Moira, where the long wall system is admirably carried out, to construct what is called a wax wall along the pack wall—that is, to build up an interior wall of well tempered clay, so that the air cannot get to the slack. This also keeps the fresh air from getting access to the gobbing, and is most effectual in preventing mischief, where the slack has this unfortunate quality. In other districts, as in Somersetshire and South Wales, modifications resulting from geological peculiarities are not uncommon. The introduction of the long wall system into the North of England, where it has not been used before, has had very satisfactory results. The men are much in favour of the pillar system, but in several deep collieries, such as those of Monkwearmouth and Hetton, the long wall system has been found very useful in working out the pillars, which have been laid out in such large dimensions as 30 by 60 yards, and thus the whole has been obtained, and mostly in the state of round coal. In large workings, where there is a great overhead pressure, it is a serious question whether this combination of systems is not the most advisable.

SOCIETY OF ENGINEERS.—On Monday evening, a paper will be read on "The Patent Laws," by Mr. W. Lloyd Wise.

FOREIGN MINES.

FRONTINO AND BOLIVIA (Gold).—The directors have received their usual advices from the mines, accompanied by a remittance of 369 ozs. of gold dust, produce for the month of February. Owing to a run of ground in one of the levels at the Frontino Mine the mill there had been at work for only eight days of the month, during which time, however, the return was at the rate of 10 ozs. per day. According to the last advices the mill had resumed stamping. The mine reports are satisfactory.

IMPERIAL OTTOMAN.—The directors received the following advices from Capt. Champion, dated Pelidil, April 16:—"I arrived here with miners and mechanics on the 13th inst. All are well, and preparing tools, &c., to commence work. I am very pleased to find the engine-shaft is well secured with masonry; it is full of water, which prevents my reporting on lode below surface, but from the heaps of mineral on surface I anticipate great returns. . . . . About a mile north of the shaft there is another lode 10 feet wide, composed of gossan and carbonate of lead. . . . . The stratum is all that can be desired, and from the little I have seen I have no doubt but this mine will be a successful undertaking."

— Capt. Champion writes on the 21st inst. from Pelidil thus:—"I have much pleasure to say that I have discovered another lead lode, about 4 ft. wide, producing spots of lead throughout. This is quite distinct from the other lode, and about ¾ mile from the engine-shaft. I have put four men to sink on it, and in my next will forward more particulars.

EXCHEQUER.—Capt. Chalmers, March 28: I have the honour to report, for the information of the board, that at the close of Saturday night's shift the air-shaft was up 63 ft., and the south drift in 27 ft., and just impinging on the shoot of ore which furnished that sent to Reno. After driving a few feet further we shall commence to raise and extract this shoot between the 30 and 40. We have also run 12 ft. of drift from the air-shaft in the 60. The progress at the air-shaft itself last week was slow—first, because the air was excessively bad; and, second, because the men were employed part of the time in drifting as above, and hauling timber for the use of the mine.

LUSITANIAN.—April 12: At Taylor's engine-shaft, below the 130, the lode is 6 ft. wide, composed of quartz, with copper ore, worth 1 ton per fm. In No. 80 winze, below the 120, east of Taylor's, on Basto's lode, the lode is worth 1 ton per fathom. At a rising in No. 81 winze, above the 28, east of the cross-cut, west of Perez' shaft, on the branch, the lode is worth ¾ ton per fathom. In the 130, east of Taylor's, the lode is 2 feet wide, composed of flookan and quartz. In the 130, west of Taylor's, the lode is 6 to 7 feet wide, composed of quartz and good stones of ore. In the 120, east of ditto, the lode is 1 foot wide, composed of quartz. In the 90, east of River shaft, the lode is 2 ft. wide, composed of much more quartz than usual. In the 70 east the lode is 2½ feet wide, composed of quartz and country. In the 28, west of the cross-cut, west of Perez' shaft, the lode is 6 in. wide, yielding small stones of lead and copper. In the 18 west the lode is 8 in. wide, worth ¾ ton per fathom. In the 18 east the lode is 6 in. wide, worth ½ ton per fathom.—Carvalhal: In the 50 east, on the great lode, the lode is 1 ft. wide, composed of quartz, mixed with the country. In the 50, west of incline shaft, the lode is 2½ feet wide, composed of quartz, spotted with lead. In the 40 east the lode is 4½ feet wide, worth ¼ ton of lead per fm. In the 30 east the lode is 2½ feet wide, producing good stones of lead. In the 10 east the lode is poor in the end. In the adit level, west of incline, the lode is worth ¾ ton of ore per fathom. In the 10 west the lode is 1 foot wide, composed of quartz, mixed with country. In the 20 west the lode is 1½ foot wide, composed of quartz and good stones of lead. In the 40 east the lode is small, but very regular; no mineral.

CAPULA (Silver).—The directors have received despatches from the superintendent, dated Pachuca, March 25, of which the following is an abstract:—Nothing has been done underground for the last fortnight, with the exception of the trammers working a few days. The ground in San Pablo cross-cut has improved very much, and lets out much more water; it had commenced sinking in the winze, which, no doubt, ere this would have been dry had we been able to have continued working. During the last week we worked in the Esperanza end; the ground improved considerably, which is a good indication of the lode becoming productive. Wherever the ground is so very hard in the lode it is generally unproductive, but when the ground is soft on the south part we frequently meet with good metal on the north part, although the ground in that direction may be hard. In San Enrique end we frequently meet with good stones of blue ore in the gossan, I may say daily. On the south part of the lode the gossan appears to be wearing out, and that is the most productive part, where we are getting some good dressing work. As little has been done in any of the stopes since my last, there cannot be much alteration. The stopes east of La Bomba shaft have improved. We shall resume the working of the stopes on Monday, the 28th. They would not have been suspended, but we were afraid of keeping the metal in the ore-yard with only two Englishmen there. Torta No. 7, of 15 montons, will be incorporated in a very few days. This week we shall complete sending for No. 8 of the same quantity. In my last I mentioned that other carriers had promised to come with 30 mules, but, hearing of the Pronunciados being there, they were afraid to come. If we can get fiteros we shall send in the same quantity for No. 9 next week.

PESTARENA UNITED (Gold).—T. Roberts, T. Warne, April 24: Pescheira Mine: The stopes in the bottom or the 70 fm. level give 8 tons of ore per fathom, worth 1½ oz. of gold per ton. The end driving south in the 46 fm. level yields 1½ ton per fathom, worth 12 dwts. per ton. The 33 end south yields 6 tons of ore per fathom. The end south in the 16 fathom level yields 4 tons per fathom, worth 10 dwts. per ton.—Aquavite: The end south in the adit on No. 1 lode yields 4 tons of ore per fathom. The lode in the 23 fm. level end south continues to yield 3 tons of ore per fathom; this end has let out water freely in the past month. The end of the 23 north has improved, yielding at present 7 tons per fathom, worth 14 dwts. per ton. The lode in the end of the 33 south is somewhat disordered, occasioned from a junction of branches, accompanied with shattered ground, and letting out plenty of water. The end of the 46 south yields 6 tons per fathom, worth 9 dwts. per ton.—Val Toppa: Nos. 1 and 2 ends south remain the same as last week; if any difference, a little better. The cross-cut east in No. 4 level has drained the water from the winze on the side lode in No. 3 level, and we have resumed the winze in No. 3, where we have a splendid lode. In our next will send you our estimates on the value of the stopes, and progress on surface.

[For remainder of Foreign Mines see to-day's Journal.]

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